CLAIM AMENDMENTS

Claim 1. (Original) Method for non-adhesive bonding of two contiguous plastic work pieces (2, 3; 5, 6) characterized in that:

the intended contact surface (K) of at least one of the two work pieces (2, 5 or 3, 6) by which it borders on the other work piece (3, 6 or 2, 5) is at least in some sections subjected to a high-energy radiation which causes the lowering of the glass transition temperature in a marginal layer (R, R'),

the two work pieces (2, 3; 5, 6) are brought into a mutual position according to the intended use, and

subsequently, to produce the bond of the two work pieces (2, 3; 5, 6) at least the modified marginal layer (R, R') in the area of its surface is heated to a temperature which is above the glass transition temperature of the marginal layer (R, R') modified by radiation, but below that of the unmodified areas of the respective work piece (2, 3; 5, 6).

Claims 2-5. (Canceled)

Claim 6. (Amended) Article (1, 4) formed of two work pieces (2, 3; 5, 6) non-adhesively bonded together, produced according to ~~one of the above Claims~~ Claim 1, characterized in that in at least one contact surface (K) of the two work pieces (2, 5), recesses (V), in particular channel-like recesses, are provided.

Claims 7-11. (Canceled)

Claim 12. (New) A hot-melt adhesion method for bonding two plastic work pieces, each work piece having an intended contact surface by which the two work pieces bond, the method comprising the steps of:

subjecting at least some sections of the intended contact surface of at least one of the work pieces to a high-energy radiation that causes the lowering of a glass transition temperature of such work piece in a marginal layer to produce a modified marginal layer;

contacting the intended contact surfaces of the two work pieces; and

heating at least the modified marginal layer to a temperature above the glass transition temperature of the modified marginal layer but below that of the unmodified areas of the respective work piece so that a bond is formed between the two work pieces.

Claim 13. (New) The hot-melt adhesion method of Claim 12, wherein the entirety of said intended contact surface of at least one of said work pieces is subjected to said high-energy radiation.

Claim 14. (New) The hot-melt adhesion method of Claim 12, wherein at least some sections of both of said intended contact surfaces are subjected to said high-energy radiation to produce said modified marginal layer.

Claim 15. (New) The hot-melt adhesion method of Claim 12, wherein said high-energy radiation is selected from the group of UV, laser, X ray and synchrotron radiation.

Claim 16. (New) The hot-melt adhesion method of Claim 12, wherein both of said work pieces are heated in said heating step.

Claim 17. (New) The hot-melt adhesion method of Claim 12, wherein said intended contact surface contains microstructure or nanostructure recesses, and wherein said modified marginal layer is a fraction of a μm so that the microstructure or nanostructure recesses remain dimensionally stable during said step of heating.

Claim 18. (New) The hot-melt adhesion method of Claim 17, further characterized in that said recesses are not pinched or plugged as a result of said step of heating.

Claim 19. (New) The hot-melt adhesion method of Claim 12, wherein said work pieces are continuous films.

Claim 20. (New) The hot-melt adhesion method of Claims 12, 17 or 19, wherein said heating step further includes holding said work pieces under pressure in relation to each other.

Claim 21. (New) A hot-melt adhesion method for bonding two plastic work pieces, each work piece having an intended contact surface by which the two work pieces bond and wherein one work piece is comprised of microstructure or nanostructure recesses in the contact surface and the other work piece includes electrodes on its contact surface, the method comprising the steps of:

subjecting at least some sections of the intended contact surface of at least one of the work pieces to a high-energy radiation that causes the lowering of a glass transition temperature of such work piece in a marginal layer to produce a modified marginal layer;

contacting the intended contact surfaces of the two work pieces; and

heating at least the modified marginal layer to a temperature above the glass transition temperature of the modified marginal layer but below that of the unmodified areas of the respective work piece while the two work pieces are under pressure in relation to each other so that a bond is formed between the two work pieces.

Claim 22. (New) An article for microfluidics applications comprising:

a first and a second plastic work piece, each having a contact surface by which the two work pieces are hot-melt adhesion bonded together; wherein

microstructure or nanostructure recesses are provided in the contact surface of the first work piece; and

a modified marginal layer is produced by high-energy radiation in at least a section of at least one of the contact surfaces, such that the modified marginal layer is characterized by a glass transition temperature lower than that of unmodified areas of the respective work piece.

Claim 23. (New) The article according to Claim 22, wherein electrodes are provided on said contact surface of said second work piece.

Claim 24. (New) The article according to Claim 22 or 23, wherein said modified marginal layer is a fraction of a μm so that the microstructure or nanostructure recesses remain dimensionally stable.

Claim 25. (New) The article according to Claim 24, wherein said microstructure or nanostructure recesses are further comprised of a filter structure.